LIFT PIN ASSEMBLY FOR A WINDOW REGULATOR

This invention relates to a lift pin assembly for a window regulator and is a division of application No. 327,526, filed December 21, 1929.

In a window regulator assembly of the gear segment and arm type the segment arm is provided with a lift pin which engages in a bracket which is secured to the lower window sash. The window is raised and lowered as is well-known by rotating the gear segment and arm about its pivot which in turn causes the lift pin to travel in an arcuate path and slidably engage in the sash bracket to raise and lower the window. Since the segment arm is relatively long and narrow and usually a metal stamping and made to withstand the torque in the plane of the window to which it is subjected during its operation, it is desirably and in a sense structurally weak in resisting torques in a plane transverse to the plane of operation of the window. In other words, when the car is in motion the long, narrow, segment arm, in conjunction with the window, will vibrate back and forth in a plane substantially transverse to the plane of the window and thus chatter and rattle as the lift pin vibrates back and forth in the sash bracket. Hence, it is the object of this invention to produce a lift pin assembly that is efficient and noiseless in operation.

In the drawing:

Fig. 1 is a side elevation showing the window regulator attached to the automobile body.

Fig. 2 is a fragmentary perspective of the segment gear and off-set arm.

Fig. 3 is a section on the line 3—3 of Fig. 2.

Fig. 4 is a section on the line 4—4 of Fig. 1.

Fig. 5 is a detail view of the lift pin and associated washers.

Referring more particularly to the drawing, the lock board may be generally designated by the numeral 1, and attached to which is the window regulator which generally may be designated by the Figure 2. The window regulator includes a regulator plate 3 which has the off-set tongue 3a. Pivoting mounted upon this plate 3 is the gear segment 4 which, when the window is to be lowered, is adapted to be rotated against the action of the spring 5 by means of a crank 6 and pinion 7 which meshes with the teeth 8 of the gear segment. Stamped out with the gear segment is the arm 9. The arm 9 as shown in Figs. 1 and 2 is off-set as at 10 so that it is not in the plane of the segment gear and consequently presents an angle section of metal to any twisting strains tending to rupture its connection with the segment. The stamping out of the gear segment 4 and arm 9 so that the segment is off-set from the arm 9 at 10 creates an angle section of metal as at 10 extending between the off-set segment 4 and the arm 9 and joining the same which is substantially L-shaped. The angle section is L-shaped in that it has one portion of the L extending substantially parallel to the edge of the arm 9 and the other portion of the L extending transversely of the arm 9.

As shown in Fig. 4 the regulator arm is operatively attached to the window by a pin and slot arrangement. The segment arm 9 carries the lift pin 12 and the slot is preferably provided by means of the loop 13 which is attached to the lower sash 14 of the window. The lift pin 12 has two spaced circumferential grooves 15 and 16 which are adapted to receive the washers 17 and 18. The washers slidably engage the sides of the loop 13 and serve as anti-rattlers since they may be made of leather, fiber, fabric, or any other suitable material which will noiselessly engage the sash bracket or loop 13. The washers are preferably of a resilient or distortable material such as leather, fiber, material, or fabric which may be distorted during use but which return substantially to its original size or shape, that is, the leather, fiber or fabric material should have sufficient comeback quality so that it will not be compressed to the point of hardness during use so that it in turn will set up a rattle through its engagement with the sash bracket 13.

As shown in Fig. 3, the regulator arm has the longitudinal reinforcement depression 13', but it is understood that the invention is not limited to this type of regulator arms but
may be equally well used with an arm not having the reinforcement depressions. The regulator arm also has the lug 19 which is adapted to abut against the offset tongue 3a, and serve as a stop against further upward movement of the regulator arm.

In operation, when the window is raised the twisting strain on the arm 9 will be resisted by the angle portion connecting the regulator arm 9 and the gear segment 4.

Claims:
1. In a window regulator, a lifting member, a lift pin attached to said member, and a resilient washer mounted on said lift pin adapted to slideably engage said loop and serve as anti-rattlers.
2. In a window regulator, a lift pin adapted to slideably engage a loop and having a washer seat, and resilient washers mounted on said lift pin adapted to slideably engage said loop and serve as anti-rattlers.
3. In a window regulator, a lift pin adapted to slideably engage a loop and having a plurality of circumferential grooved washer seats, and resilient washers for said washer seats which slideably engage said loop and serve as anti-rattlers.
4. In a window regulator a lift pin adapted to slideably engage a member operatively associated with the window to raise and lower the same, one or more inherently distortable substantially flat washers mounted on the said lift pin and adapted to slideably engage the said member and to serve as an anti-rattler between the pin and the member and associated window.
5. In a window regulator, a lift pin adapted to slideably engage a loop and having a washer seat, and distortable washers mounted on said lift pin adapted to slideably engage said loop and serve as anti-rattlers.
6. In a window regulator, a lift pin adapted to slideably engage a loop and having a plurality of circumferentially grooved washer seats, and washers of a distortable fibrous material for said washer seats which slideably engage said loop and serve as anti-rattlers.
7. In a window regulator having a segment arm, a lift pin carried by the said arm adapted to slideably engage a loop, resilient washers mounted on the said lift pin and adapted to slideably engage the said loop and serve as anti-rattlers between the segment arm and the loop.

In testimony whereof I affix my signature.

HERBERT C. FIELD.